



US006413700B1

(12) **United States Patent**
Hallman et al.

(10) Patent No.: **US 6,413,700 B1**
(45) Date of Patent: **Jul. 2, 2002**

(54) **MASKED PRESENSITIZED PRINTING
PLATE INTERMEDIATES AND METHOD OF
IMAGING SAME**

(75) Inventors: **Robert W. Hallman**, Palisades Park,
NJ (US); **Hui Zhu**, Yonkers; **Ken-Ichi
Shimazu**, Briarcliff Manor, both of NY
(US); **S. Peter Pappas**, Wood Ridge,
NJ (US)

(73) Assignee: **Kodak Polychrome Graphics, LLC**,
Norwalk, CT (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/709,128**

(22) Filed: **Nov. 9, 2000**

Related U.S. Application Data

(60) Division of application No. 08/995,495, filed on Dec. 22,
1997, now Pat. No. 6,187,380, which is a continuation-in-
part of application No. 08/565,288, filed on Nov. 30, 1995,
now Pat. No. 5,820,932.

(51) Int. Cl.⁷ **G03F 7/11**; G03F 7/16;
G03F 7/20

(52) U.S. Cl. **430/302**; 430/273.1

(58) Field of Search 430/302, 273.1

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,458,311 A * 7/1969 Alles 96/35.1
3,652,273 A * 3/1972 Htoo 96/36
4,003,312 A 1/1977 Gunter 101/466
4,072,527 A * 2/1978 Fan 96/87 R
4,132,168 A * 1/1979 Peterson 101/471
4,429,027 A * 1/1984 Chambers et al. 430/5
4,599,627 A 7/1986 Vollert 346/140
4,833,486 A 5/1989 Zerillo 346/1.1
4,981,765 A * 1/1991 Mizuguchi 430/5
5,466,653 A 11/1995 Ma et al. 503/200

5,495,803 A * 3/1996 Gerber et al. 101/401.1
5,820,932 A 10/1998 Hallman et al. 427/261

FOREIGN PATENT DOCUMENTS

DE 4117127-a1 * 11/1992 G03F7/09
EP 0503621 9/1992
EP 0509514-a1 * 10/1992 G03F7/11
EP 0533168 3/1993
EP 0591916 4/1994
EP 0641648 3/1995
JP 63-102936 5/1988
JP 4197777 7/1992
JP 05313376-a2 * 11/1993 G03F7/11
WO 9411191 5/1994

OTHER PUBLICATIONS

RN 8002-33-3, Registry ACS, copyright 2001, one page
from online Registry file in STN database service.*
Treleawan, Derwent 94-120079, Abstract of EP 0591916;
4/94.

Yamaguchi, Chem. Abst. 117:223164, Abstract of
JP04-197777; issued Jul. 17, 1992.

Yamaguchi, JPOABS 04-197777, Abstract of JP04-197777,
10/92.

Yamaguchi, Derwent 92-288725, Abstract of JP04-197777;
issued Jul. 17, 1992.

English translation of Yamaguchi; JP04-197777; issued
Nov. 29, 1990.

* cited by examiner

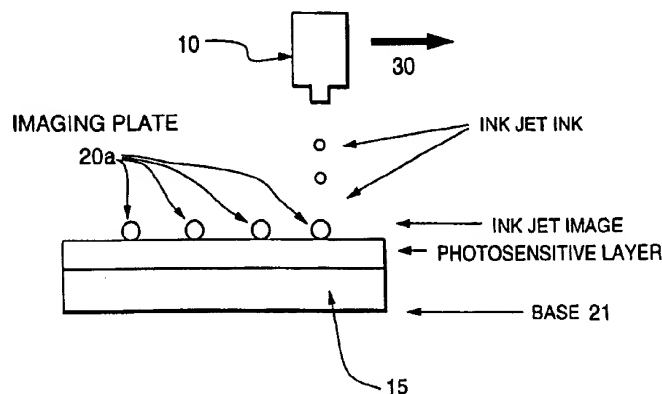
Primary Examiner—Cynthia Hamilton

(74) Attorney, Agent, or Firm—Ratner & Prestia

(57) **ABSTRACT**

A method for forming an image on a printing plate inter-
mediate having a radiation transparent removable coating
layer is disclosed. An image mask, opaque to ultraviolet
radiation, is applied to the coating layer with an ink jet
system. After the plate intermediate is exposed with ultra-
violet radiation, the image mask and coating layer are
removed, and plate intermediate developed.

21 Claims, 5 Drawing Sheets



Having thus fully set forth the nature and merits of my invention,

What I claim as new is—

In a stove-drum or other equivalent part of heat-

ing apparatus, the means employed, or their equivalent,

for securing a permanent gas-tight joint between

the ends of the cylindrical portions thereof and the

end plates or other confining portions of said apparatus,

consisting of the rings O and O', attached to or

upon the ends of said cylinders A and B, respectively,

and from thence projecting horizontally outward

or inward and thence upward, so as to form a rebate,

D, for the reception of the cover K, in combination

with said cover, and with suitable bolts G passing

through said parts, substantially as shown and described.

In testimony that I claim the foregoing I have here-

unto set my hand this 6th day of February, 1871.

MICHAEL G. MAGAN.

Witnesses:

W. P. ALKENDORPH,
Adv. P. CORSE.

and the top and bottom plates, so as to cause the heated escaping products of combustion to pass through the same and into an exit-pipe passing outward through the side or from the top of said drum, and thereby imparting a portion of their heat to the air surrounding the latter.

This device is, however, only shown for the purpose of illustrating my invention, which, as will be readily seen, is equally applicable to any portions of heating apparatus where it is desired to form a permanent joint between the end of a sheet-metal section or cylinder and a cast-metal cover.

The expected advantages possessed by this construction of a drum are—

First, the joint as either end is rendered entirely independent of and cannot be affected by the expansion or contraction of other parts of the device, and being made with very short bolts, is not liable to derangement from or by changes of temperature.

Second, each joint is horizontal, and no change of temperature or ordinary use of the heating apparatus can in any manner loosen or remove the cement, so that, if well made originally, said joints are certain to continue gas-tight while the metal remains intact.



US006367381B1

(12) **United States Patent**
Kanga

(10) **Patent No.:** **US 6,367,381 B1**
(45) **Date of Patent:** **Apr. 9, 2002**

(54) **LASER IMAGED PRINTING PLATES
COMPRISING A MULTI-LAYER SLIP FILM**

(75) **Inventor:** **Rustom Sam Kanga, Marietta, GA
(US)**

(73) **Assignee:** **Polyfibron Technologies, Inc., Atlanta,
GA (US)**

(*) **Notice:** Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** **09/507,840**

(22) **Filed:** **Feb. 22, 2000**

(51) **Int. Cl.⁷** **G03C 1/815; G03F 7/11**

(52) **U.S. Cl.** **101/395; 101/456; 430/273.1;
430/302; 430/306; 430/327**

(58) **Field of Search** **430/5, 271.1, 273.1,
430/302, 306, 309, 327, 328; 101/456,
467, 395, 401.1**

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,262,275 A * 11/1993 Fan 430/306
5,354,633 A 10/1994 Lewis et al. 430/5
5,387,496 A 2/1995 DeBoer 430/322
5,429,909 A 7/1995 Kaszczuk et al. 430/273
5,506,086 A * 4/1996 Van Zoeren 430/306
5,649,486 A * 7/1997 Lewis 101/453
5,719,009 A * 2/1998 Fan 430/306
5,821,028 A * 10/1998 Maejima et al. 430/201

5,925,500 A * 7/1999 Yang et al. 430/300
6,020,108 A * 2/2000 Goffing et al. 430/306

FOREIGN PATENT DOCUMENTS

EP 0 454 083 A2 10/1991
EP 0 544 286 A1 6/1993
EP 0 636 491 A1 2/1995
EP 0 672 954 A2 9/1995
EP 0 687 567 A2 12/1995
EP 0 687 570 A1 12/1995

* cited by examiner

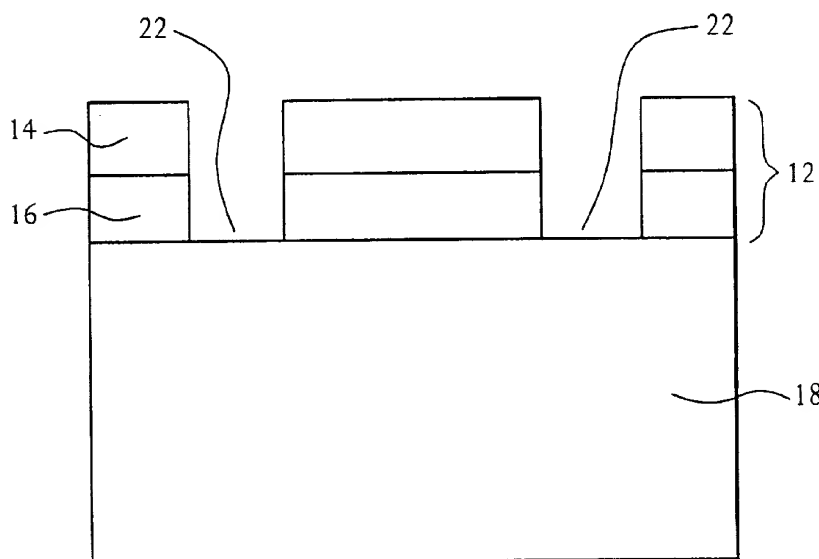
Primary Examiner—Stephen R. Funk

(74) *Attorney, Agent, or Firm*—Woodcock Washburn LLP

(57) **ABSTRACT**

The present invention provides a method of making a laser imaged printing plate. First, a solid, uncured printing plate is modified with both a UV absorber and an IR absorber. This is most conveniently done by constructing a multilayer slip film comprising at least two layers wherein at least one layer comprises a strong UV absorber, and wherein at least one other layer comprises an IR absorber having high absorptivity. The multilayer slip film is already adapted for use with a printing plate and is applied in the usual fashion to the surface of the uncured printing plate. The printing plate with the multilayer slip film can be stored for a time, or used immediately, as the printer's needs dictate. In use, the multilayer slip film is ablated from the photopolymer using an IR laser operating at a selected wavelength to create an in situ negative. The resulting negative can be subjected to typical UV flood exposure and development.

19 Claims, 2 Drawing Sheets



MICHEL G. FAGAN, OF TROY, NEW YORK, ASSIGNOR TO HIMSELF
AND ALBERT G. CORSE, OF SAME PLACE.

Letters Patent No. 112,233, dated February 28, 1871.

IMPROVEMENT IN HEATING APPARATUS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, MICHEL G. FAGAN, of Troy, in the county of Rensselaer and in the State of New York, have invented certain new and useful improvements in Heating Apparatus; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a plan view of the upper side of a drum constructed in accordance with my improved method, and Figure 2 is a vertical central section of the same on the line x x of fig. 1.

Letters of like name and kind refer to like parts in each of the figures. As commonly constructed the drums or sections of heating-furnaces above the fuel-chamber are composed of sheet-iron cylinders inclosed at either end by cast-iron plates resting upon or against the same, and the whole secured together by means of a number of bolts passing through both plates and the cylinder, and continuing the latter beyond the former.

This construction is, however, open to serious objections, among which are—First, the impossibility of making a joint between the ends of the cylinder and the plates that shall retain a sufficient amount of cement to insure a gas-tight drum, and Second, the unequal vertical expansion of the parts, by means of which, at certain temperatures, the bolts are slackened, so as not to confine said parts closely together, while at other temperatures said bolts are subjected to a sufficient strain to occasionally cause them to break, and thereby derange the heating apparatus and render repairs necessary.

To obviate these difficulties is the design of my invention, which consists in the employment of cast-metal rings fitted around or within, and secured to the ends of the cylinders, and combined with the end covers, substantially as and for the purpose hereinafter shown.

In the annexed drawing—A and B represent the outer and inner cylinders, respectively, of a drum, corresponding in length and secured to and around the upper end of the outer cylinder A is a cast-metal ring, C, the outer edge of which coincides with that of said cylinder, from whence it extends downward upon the same to a sufficient distance to permit of the insertion of rivets, bolts, or other equivalent devices, by means of which said parts are attached together.

From its upper edge the ring C extends horizontally outward and then vertically upward, so as to

form a right-angled rebate, D, within and upon which is placed the top plate E, which, as seen in fig. 2, consists of a plane disk of cast metal, provided with a number of horizontally-projecting lugs, F, through which pass the bolts G, used for securing said plate to or upon said ring, the radial conformation of said rebate D being suited to the exterior shape of said plate with its lugs.

The ring C, attached to the upper end of the inner cylinder B, is constructed in a similar manner to that before described of C, except that it fits within instead of around said cylinder, and projects inward instead of outward from the same. As thus constructed a suitable layer of cement is spread upon the seat or horizontal portion of each ring, and the top plate placed thereon, and secured snugly thereto by means of bolts passing through both parts.

The rings H and H', attached respectively to the lower ends of the outer and inner cylinders, are fitted to or upon the inside of the same, and from thence, extending horizontally outward or inward, are provided with lugs I, corresponding with those forming a part of the top plate, but have no upward-projecting flanges.

The bottom plate K corresponds, in exterior size and shape, with the top plate, but has, in addition, a flange, L, projecting upward from its outer edge, so as to embrace the edge of the ring H, and a second flange, K', projecting upward just outside of the inner cylinder B.

In attaching together the bottom plate and drum the cement is spread upon the former, immediately beneath each ring, and is held in place by means of the vertical flanges.

It desired, in order to render more certain the closeness of joints, cement may be placed within the spaces left between the cylinders and vertical flanges, at the lower end of the drum, and upon and around the inner and outer edges of the parts, said cement will be securedly held in place.

It will be seen that, in attaching the bottom plate to the cylinders, it is necessary to form the seat for the reception of the cement upon and to attach the upward-projecting flanges to said plate, instead of the ring, as before; but as this arrangement of parts is just the reverse of that employed at the upper end of the drum, it is considered only a necessary modification of the same.

The drum above described is intended for use in a hot-air furnace, where it would be placed above the fuel-chamber, and connected therewith by means of one or more pipes opening from the upper end of said chamber into the space between the cylinders